Supplementary Notes

Expanded analysis and results

The analysis was designed to detect changes in smoking prevalence that corresponded with campaign funding decisions. Segmented trends in monthly smoking prevalence from January 2008 to December 2016 were analysed using an interrupted time-series design using the commencement and cessation of campaign activity as intervention points. We developed segmented regression models to test the hypothesis that there was a decrease in the rate of decline in smoking prevalence that corresponded with the absence of campaign activity. To eliminate the effects of temporal ordering, autocorrelation and partial autocorrelation of residuals were examined using a correlogram. Appropriate order for auto-regression and moving average for the final model was selected after comparing model fit of the (p-1) and (p+1) auto-regression in combination with (q-1) and (q+1) moving average models. The final model included 3rd order auto-regression and 1st order moving average. Robust standard error was used for the ARMA model.

Table 1: Interrupted time series analysis results analysing change in smoking prevalence trends at a) commencement of 700 TARPs per month (high-intensity; August 2010); b) plain packaging implemented (Dec 2012); c) end of high-intensity campaign (July 2013); d) reinstatement of moderate-intensity campaign (400 TARPs, July 2014)

	β	95% CI Lower	95% CI Upper	P
Intercept	15.222	14.052	16.392	<0.001
Baseline trend	-0.006	-0.063	0.051	0.843
Level change at point a	0.544	-0.720	1.809	0.399
Trend change from baseline to a-b slope	-0.096	-0.182	-0.010	0.029
Level change at point b	0.067	-3.259	3.393	0.969
Trend change from a-b slope to b-c slope	-0.009	-0.776	0.757	0.981
Level change at point c	-0.577	-4.287	3.134	0.761
Trend change from b-c slope to c-d slope	0.415	-0.402	1.233	0.319
Level change at point d	-1.688	-4.636	1.259	0.262
Trend change from c-d slope to d-end slope	-0.414	-0.776	-0.051	0.025
Trend change from a-c slope to c-d slope	0.406	0.0348	0.777	0.032
Slope for a-b	-0.102	-0.169	-0.034	0.003
Slope for b-c	-0.111	-0.881	0.659	0.778
Slope for c-d	0.304	-0.063	0.672	0.104
Slope for d-end	-0.109	-0.171	-0.047	0.001

Further details regarding 'Tax' variable

The finding that 'Tax' was not statistically significant in the model testing whether funding decision intervention points corresponded with changing smoking prevalence trends warrants further discussion. The inclusion of the 'Tax' variable was to enable the detection of any disruptive effects of tax increases that may also contribute to the change in smoking prevalence at each intervention point. The decision to use an index of cost increases using Tobacco Consumer Price Index (CPI) data rather than individual intervention points to represent each of the five major tax increases that occurred over this period (Figure A1) was due to having insufficient data points between interventions to adequately test the slopes. This 'Tax' variable is limited in that it does not adequately represent how consumers respond to tax increases, which may evolve as they become accustomed to increased costs or shift to cheaper brands, nor does it capture industry response in creating cheaper products. Consequently, it was beyond the scope of the study to assess the impact of tax changes on smoking prevalence via increased costliness of tobacco, which has been done in other studies using different analyses, larger samples, and over longer periods of time [e.g. 2, 7]. Despite the limitations, it is worth noting that 'Tax' was statistically significant and negatively correlated with smoking prevalence when the ARMA (3,1) model was run without the intervention points: β=-0.045, 95%CI β=-0.056 to -0.034, P<0.001.

Figure A1: ‘Tax’ variable derived from Australian Tobacco Consumer Price Index data [24]